Little River Watershed Open House

September 28, 2010

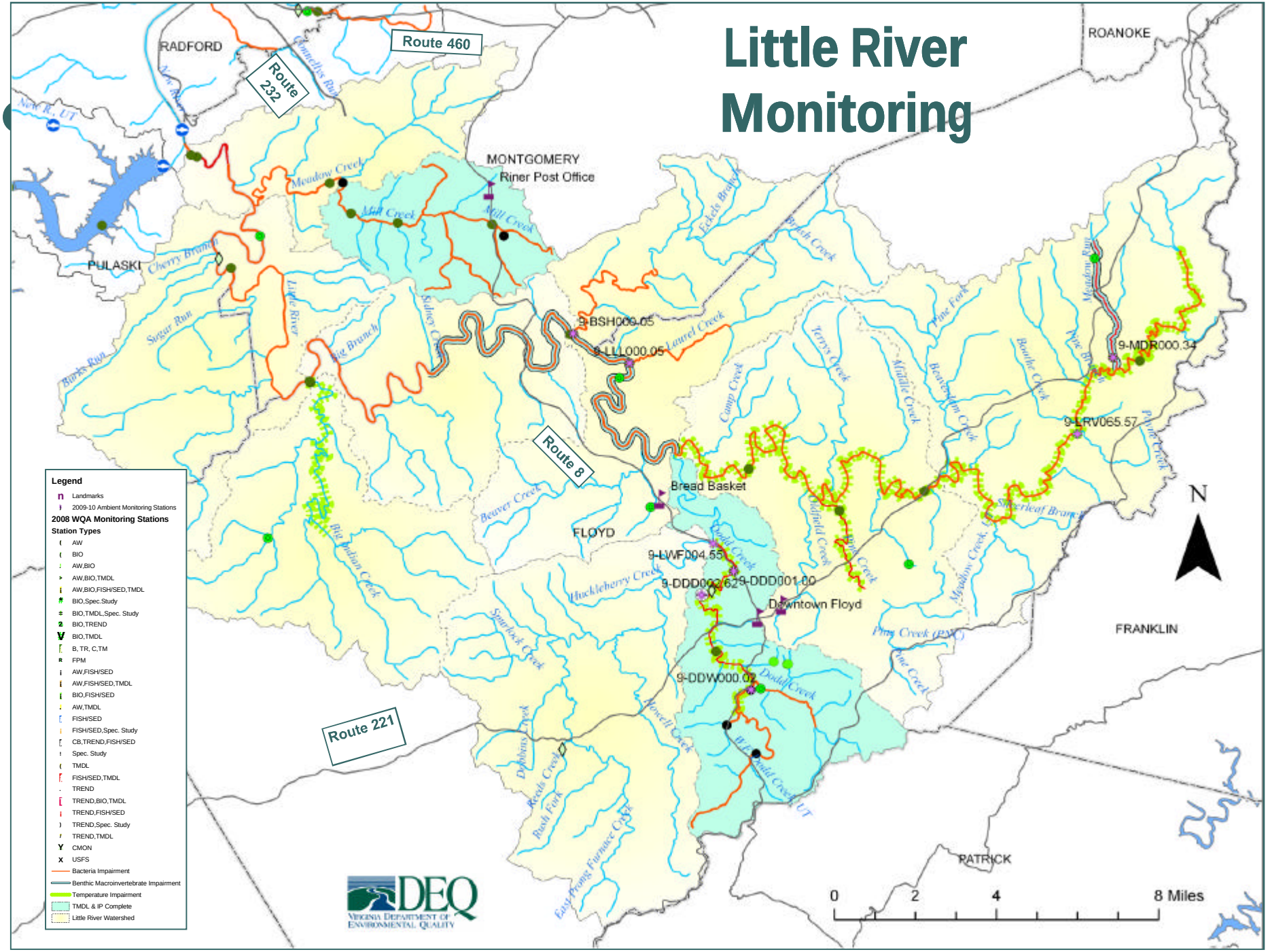
Welcome!

- Why are we here?
  - Water monitoring information
  - Water quality concerns on Little River and tributaries
  - Special Study to address water quality problems

Little River Watershed

- Watershed is approximately 225,000 acres
- Drains into the New River near Radford
- DEQ monitors and assesses water quality throughout the watershed


Little River


Little River Monitoring
RADFORD
Route 460
Route 232
ROANOKE
MONTGOMERY
Riner Post Office
PULASKI
9-BSH009.05
9-LLL000.05
9-MDR000.34
9-LRV065.57
Route 8
Bread Basket
FLOYD
9-LWF004.55
9-DDD002.62
9-DDD001.00
Downtown Floyd
FRANKLIN
9-DDW000.02
Route 221
PATRICK
N
0 2 4 8 Miles
Legend
Landmarks
2009-10 Ambient Monitoring Stations
2008 WQA Monitoring Stations
Station Types
AW
BIO
AW,BIO
AW,BIO,TMDL
AW,BIO,FISH/SED,TMDL
BIO,Spec.Study
BIO,TMDL,Spec. Study
BIO,TREND
BIO,TMDL
B, TR, C,TM
FPM
AW,FISH/SED
AW,FISH/SED,TMDL
BIO,FISH/SED
AW,TMDL
FISH/SED
FISH/SED,Spec. Study
CB,TREND,FISH/SED
Spec. Study
TMDL
FISH/SED,TMDL
TREND
TREND,BIO,TMDL
TREND,FISH/SED
TREND,Spec. Study
TREND,TMDL
CMON
USFS
Bacteria Impairment
Benthic Macroinvertebrate Impairment
Temperature Impairment
TMDL & IP Complete
Little River Watershed
DEQ
Virginia Department of Environmental Quality

Water Quality Impairments in Little River Watershed

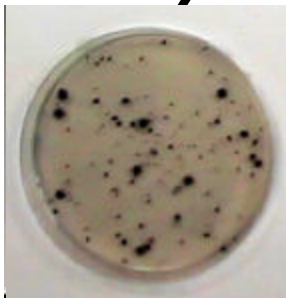
- Bacteria
- Temperature
- Benthic Macroinvertebrate Community

Bacteria Impairments

- Little River
- Meadow Run
- Pine Creek
- Mill Creek
- Brush Creek
- Laurel Creek
- Dodd Creek

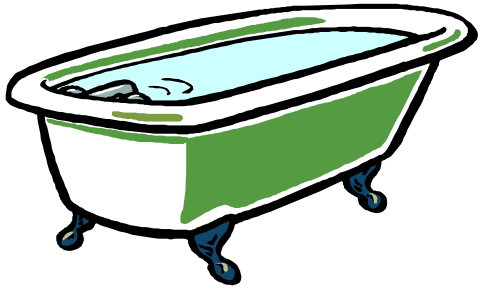
Laurel Creek – Bacteria impairment

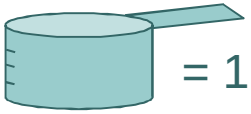
Bacteria Impairments (con't)



- Fecal Bacteria in Little River
  - What's Fecal Bacteria?
    - Bacteria associated with feces from warm blooded animals (fecal coliform, *E. coli*)
  - Why should we care?
    - Pathogens (including some strains of *E. coli)*
    - Parasites
  - Water Quality Standard
    - Swimming & Fishing Use
    - Instantaneous: 235 cfu/100 ml *E. coli*
    - Monthly Geometric Mean: 126 cfu/100 ml *E. coli*

How much are we talking about?

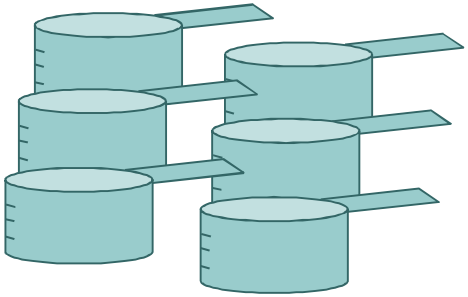


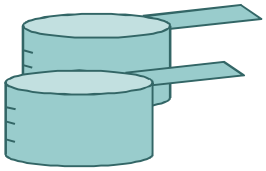


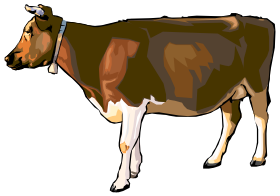
= 1 cup

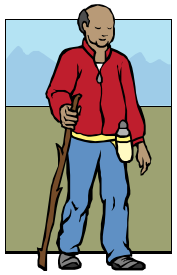
= 1 Tbsp

= 1 tsp









Temperature Impairments

- Little River
- Pine Creek
- Big Indian Creek
- West Fork of Dodd Creek
- Dodd Creek

Benthic Macroinvertebrate Community Impairments

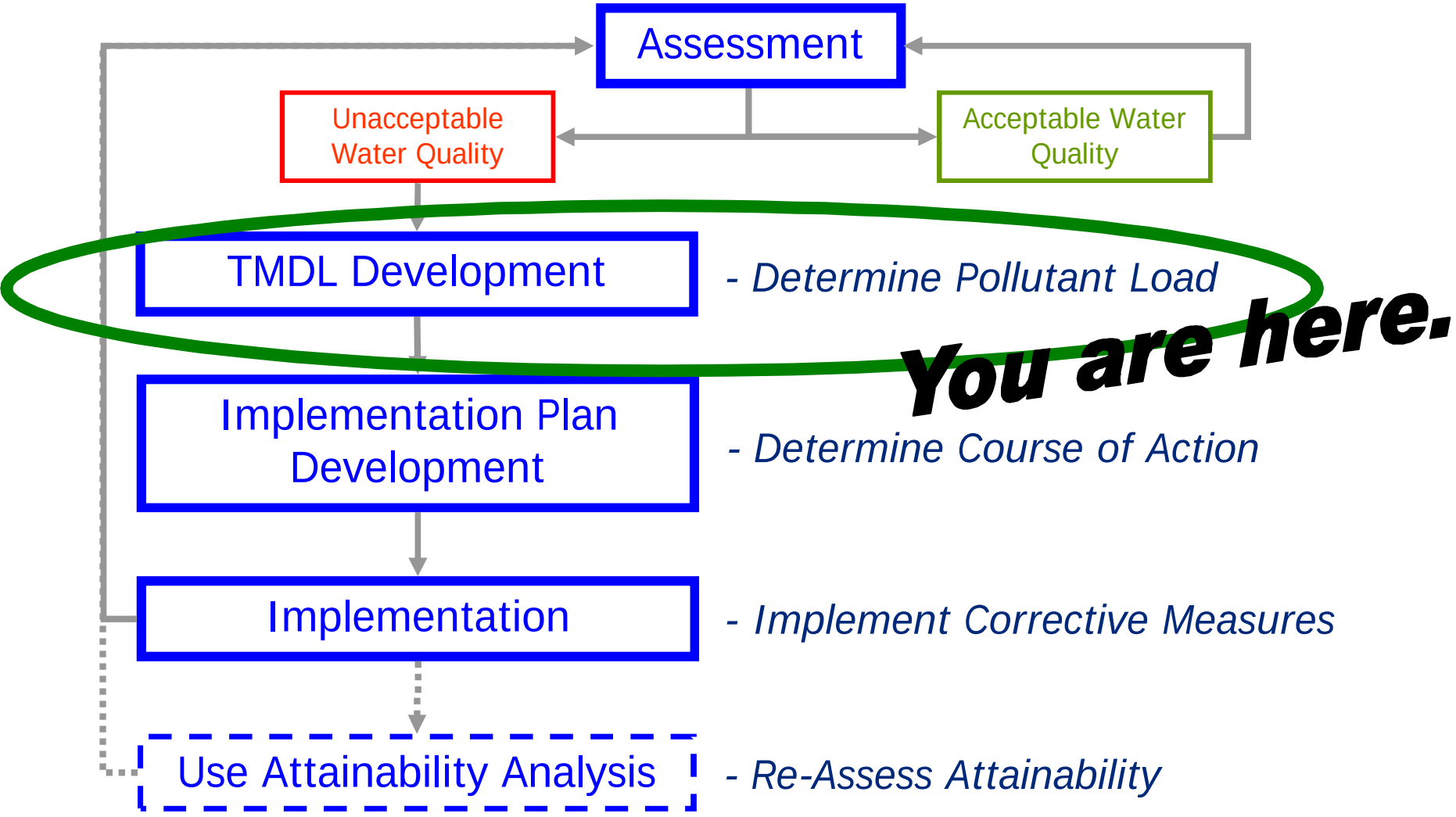
- Little River
- Meadow Run

Meadow Run – Bacteria & Benthic impairments

How Does the State Address Water Quality Impairments?

- Total Maximum Daily Load Study
  - TMDL = Special Study
  - Identifies all sources of pollution
  - Establishes pollution reductions
  - Required by the Clean Water Act & Virginia's Water Quality Monitoring Information and Restoration Act

TMDL Process



Little River Watershed TMDL Study

- Maptech, Inc. hired to conduct watershed modeling
- Public Participation needed!
  - Kick-off Meeting: September 28, 2010
  - 2 additional meetings
- Final product: TMDL Report
- Submitted to EPA for approval

Major Components of the TMDL Report Development

- Source Assessment
- Modeling
  - Hydrology
  - Water Quality
  - Load Allocation
- Public Participation

Source Assessment

- Permitted discharges
  - Wastewater treatment facilities
  - Other Permitted Discharges
- Human
  - Biosolids
  - Failed Septic Systems
  - Straight Pipes
- Pets
- Livestock
- Wildlife

Human Bacteria Sources

Population, housing units, and onsite treatment system based on U.S. Census

- Failing or Improperly Functioning Septic Systems
  - Effluent reaching ground surface throughout the year
  - Lateral movement continuously to stream
- Straight Pipes
  - Direct continuous input into stream

Pet Bacteria Source

- Population/household based on literature values, veterinarians, and animal control
- Translated to housing units based on U.S. Census
- Land-applied

Livestock Source

- Population
  - Virginia Agricultural Statistics
  - CAFO Permits
- Distribution of waste
  - Pastured
  - Confined, waste collected, spread
  - Direct deposition to the stream
- Seasonal varying applications

Wildlife Bacteria Source

- Population
  - Animal densities from VDGIF biologists
  - Habitat from literature values
- Distribution of waste based on habitat
  - Land-applied
  - Direct deposition to the stream
- Seasonal variations based on migration patterns and food sources

How do we determine a TMDL?

+

Watershed data

TMDL

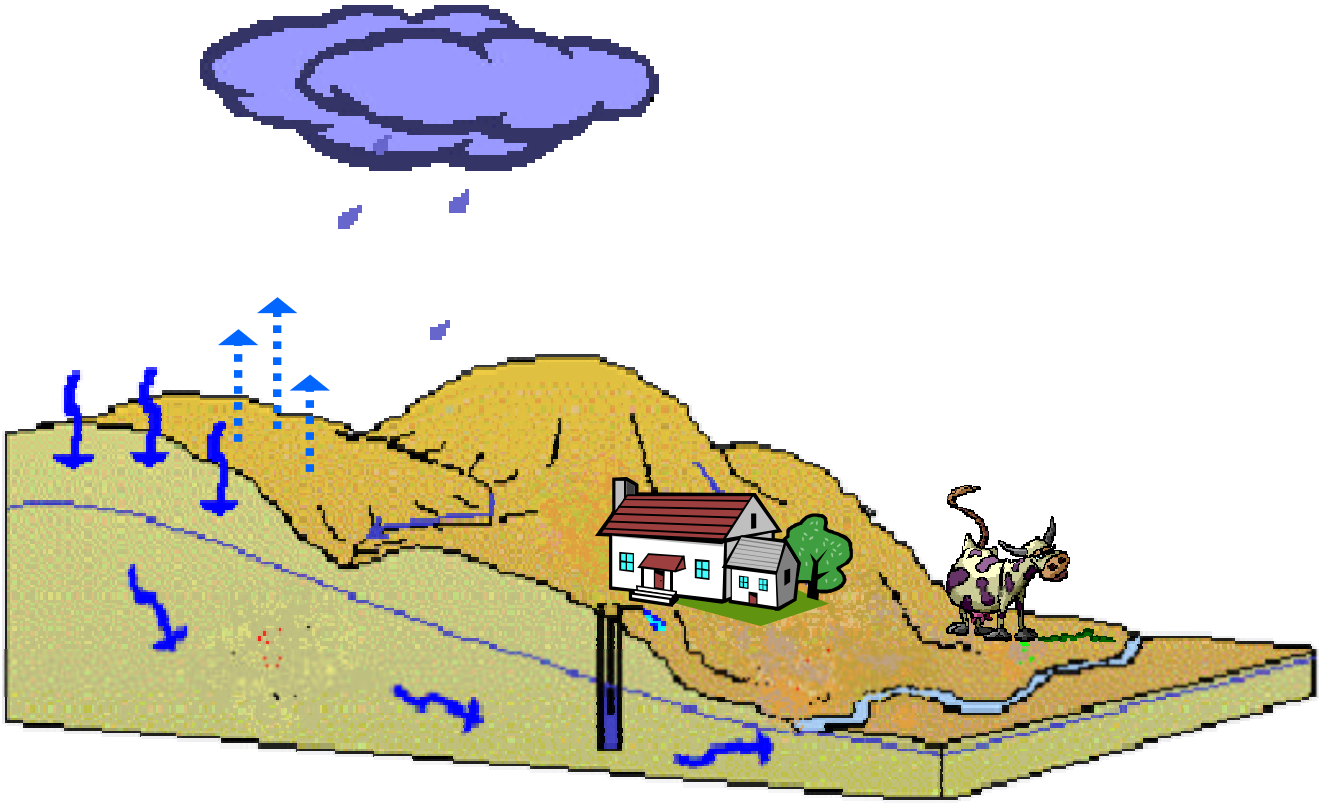
Hydrologic Modeling Components

- Climatic data
- Land use
- Topography
- Soils
- Stream channel characteristics
- Point source discharge/withdrawal
- Flow data

Water Quality Modeling Components

- Sources
  - Fecal production
  - Bacteria densities
  - Distribution
- Delivery Mechanisms
  - Direct
  - Land-applied
- Temporal Variation

Modeling



What happens after the TMDL Report is approved?

- Implementation Plan development begins
  - Road map to achieving pollutant reductions
  - Lists appropriate best management practices (BMPs)
  - Includes cost benefit analysis
  - Public Participation needed!

Little River Watershed TMDL & Implementation Plan

- Showcase project
- TMDL and Implementation Plan developed back-to-back
- Incorporates a large watershed
- Covers multiple water quality impairments
- Includes Mill Creek and Dodd Creek subwatersheds
  - Already have TMDLs and Implementation Plans developed

Next Steps

- Incorporate public input from tonight's meeting
- Maptech, Inc. continues work on watershed model
- Schedule next meeting

Contact Information

DEQ

Mary Dail

TMDL Coordinator

Mary.Dail@deq.virginia.gov

540-562-6715

MapTech, Inc.

Mohammad Al-Smadi

Project Manager

malsmadi@maptech-inc.com

James Kern

Chief Operations Officer

jkern@maptech-inc.com

(540) 961 - 7864

Thank you!

Please visit the displays and enjoy your evening!